AMENDMENT TO THE CLAIMS

1. (currently amended) A dedicated apparatus for detecting changes in molecular structure of human body surface tissue and diagnosing the properties and the degree of pathologic change of a gland tumor in a corresponding region~~. This apparatus is comprised of:~~, the apparatus comprising:

~~(1)~~ a Fourier Transform mid-infrared spectrometer, used in conjunction with a mid-infrared fiber optics sampling attachment to ~~conveniently~~ acquire mid-infrared ~~spectral data~~light reflected from ~~of~~ human body surface tissue, wherein the Fourier Transform mid-infrared spectrometer includes:

an interferometer part for generating mid-infrared light to be provided to the mid-infrared fiber optics sampling attachment;

an infrared detector part comprising an abaxial parabolic mirror, a detector and a 3-dimensional tuning holder, for maximizing the collection of the mid-infrared light acquired by an ATR probe of the mid-infrared fiber sampling attachment, and for generating mid-infrared spectral data; and

~~. This data is processed by a~~A data processor for processing the mid-infrared spectral data and comparing the processed infrared spectral data ~~of its own and compared~~ with a tumor database to diagnose the properties and the degree of pathologic change of the tested gland tumor;

~~(2)~~ a mid-infrared fiber sampling attachment, connected to a fiber coupling part, wherein the mid-infrared fiber sampling attachment includes a mid-infrared incident fiber, a mid-infrared exiting fiber, and a ZnSe or Ge ATR probe, each of the mid-

infrared incident and exiting fibers is a hollow fiber with multiple layers of different coatings on its inside wall, and the ATR probe is of a tapered shape or cylindered shape with an inclined section~~an ATR probe~~ and is able to acquire an subcutaneous infrared spectrum of the tumor at the body surface when being placed on and in tight contact with the body surface~~ and in tight contact with it~~;

~~(3)~~ a fiber coupling part, placed between the interferometer part and the infrared detector part of the Fourier Transform infrared spectrometer~~ and an infrared detector part,~~ wherein ~~The~~the fiber sampling attachment is fixed onto the fiber coupling part, and the fiber coupling part ~~is comprised of~~ includes two pieces of abaxial parabolic mirrors, as well as reflection mirrors and a precise fine-tuning mechanism for adjusting the parabolic mirrors~~. This device~~, the fiber coupling part makes ~~the~~ parallel light from ~~an~~the interferometer part converge into a point with a diameter of 1 - 3 mm so as to couple the converged light~~, allowing it to effectively be coupled~~ into ~~an~~the mid-infrared incident fiber of the fiber sampling attachment, and ~~for the light from~~couples light from ~~an~~the mid-infrared exiting fiber of the fiber sampling attachment~~ to effectively be coupled~~ into the infrared detector part~~light path system. The precise fine-tuning mechanism is used for adjusting the position of the parabolic mirrors to precisely focus the infrared light~~;

~~(4) an infrared detector part, comprising an abaxial parabolic mirror, a detector and a 3-dimensional tuning holder for maximizing the collection of information acquired by the ATR probe~~.

2. (currently amended) The dedicated apparatus as described in claim 1, wherein the Fourier Transform mid-infrared spectrometer uses ZnSe as ~~the~~ infrared window material, i.e., each part allowing infrared transmission is made of ZnSe.

3. (currently amended) The dedicated apparatus as described in claim 1, wherein athe tumor database stores spectral data criterion for diagnosing whether a gland tissue has pathologic changes or not~~. This database~~, and is established based on statistical analysis on infrared spectrum data of the tissue of a certain number of healthy persons and patients.

4. (cancelled)

5. (currently amended) The dedicated apparatus as described in claim 1, wherein the mid-infrared incident and exiting fibers used in the fiber sampling attachment have a diameter of 1 -- 3 mm, and a transmitting range of 700 -- 4000 cm^{-1}.

6. (currently amended) The dedicated apparatus as described in claim 1, wherein for diagnosis of pathologic changes in the mammary glands, the band widths, peak positions, peak intensities/peak areas, and relative intensity variations of the peaks in the region of 1000 cm^{-1} -- 1800 cm^{-1} and 2800 cm^{-1} - 3000 cm^{-1} are detected.

7. (currently amended) The dedicated apparatus as described in claim 6, wherein for diagnosis of pathologic changes in the mammary glands, the band widths, peak positions, peak intensities/peak areas, and relative intensity variations of the peaks in the region of 1400 cm^{-1} -- 1490 cm^{-1} are detected.

8. (currently amended) The dedicated apparatus as described in claim 7, wherein for diagnosis of pathologic changes in the mammary glands, variations in band widths, peak positions, and peak intensities/peak areas of 1460 cm^{-1} and 1400 cm^{-1} bands are detected.

9. (currently amended) The dedicated apparatus as described in claim 1, wherein for diagnosis of pathologic changes in the thyroid glands, the band widths, peak positions, peak intensities/peak areas, and relative intensity variations of the peaks in the region of 2800 cm^{-1}-_3000 cm^{-1} and 1000 cm^{-1} -_1800 cm^{-1} are detected.

10. (currently amended) The dedicated apparatus as described in claim 9, wherein for diagnosis of pathologic changes in the thyroid glands, the band widths, peak positions, peak intensities/peak areas, and relative intensity variations of the peaks in the region of 2800 cm^{-1} _-3000 cm^{-1} and 1400 cm^{-1} _-_1500 cm^{-1} are detected.

11. (currently amended) The dedicated apparatus as described in claim 9, wherein for diagnosis of pathologic changes in the thyroid glands, the band widths, peak positions, peak intensities/peak areas, and relative intensity variations of the peaks in the region of 1200 cm^{-1} _-1580 cm^{-1} are detected.

12. (currently amended) The dedicated apparatus as described in claim 1, wherein for diagnosis of pathologic changes in the parotid and submaxillary glands, the band widths, peak positions, peak intensities/peak areas, and relative intensity variations of the peaks in the region of 1000 cm^{-1} _-1800 cm^{-1} are detected.

13. (currently amended) The dedicated apparatus as described in claim 12, wherein for diagnosis of pathologic changes in the parotid and submaxillary glands, the band widths, peak positions, peak intensities/peak areas, and relative intensity variations of the peaks in the region of 1200 cm^{-1}-_1580 cm^{-1} are detected.

14. (currently amended) A method for diagnosing the properties and the degree of pathologic change of a gland tumor in a corresponding region by detecting changes of molecular structure of human body surface tissue comprising of the following steps:

(1) using the apparatus as described in claim 1, and selecting operation parameters of the apparatus for detecting the related glands;

(2) cleaning and sterilizing the ATR probe and the skin of a human body surface to be tested;

(3) switching on the apparatus, then scanning and recording a spectrum of air acquired by the ATR probe for being used as a background spectrum;

(4) placing the ATR probe on the skin surface of the region to be tested, the ATR probe being in tight contact with the skin, then using the apparatus to scan and record a spectrum of the cleaned human body surface;

(5) comparing the recorded spectrum with tumor data in ~~a spectrum~~the tumor database to diagnose the properties and the degree of pathologic change of the gland tumor.

15. (currently amended) The method as described in claim 14, wherein for diagnosis of pathologic changes in the mammary glands, the band widths, peak positions, peak intensities/peak areas, and relative intensity variations of the peaks in the region of 1000 cm^{-1} ~~-~~ 1800 cm^{-1} and 2800 cm^{-1} ~~-~~ 3000 cm^{-1} are detected.

16. (currently amended) The method as described in claim 15, wherein for diagnosis of pathologic changes in the mammary glands, the band widths, peak positions, peak intensities/peak areas, and relative intensity variations of the peaks in the region of 1400 cm^{-1} ~~-~~ 1490 cm^{-1} are detected.

17. (original) The method as described in claim 16, wherein for diagnosis of pathologic changes in the mammary glands, variations in band widths, peak positions, peak intensities/peak areas of 1460 cm^{-1} and 1400 cm^{-1} are detected.

18. (currently amended) The method as described in claim 14, wherein for diagnosis of pathologic changes in the thyroid glands, the band widths, peak positions, peak intensities/peak areas, and relative intensity variations of the peaks in the region of 2800 cm^{-1} - - 3000 cm^{-1} and 1000 cm^{-1} – - 1800 cm^{-1} are detected.

19. (currently amended) The method as described in claim 18, wherein for diagnosis of pathologic changes in the thyroid glands, the band widths, peak positions, peak intensities/peak areas, and relative intensity variations of the peaks in the region of 2800 cm^{-1} - - 3000 cm^{-1} and 1400 cm^{-1} – - 1500 cm^{-1} are detected.

20. (currently amended) The method as described in claim 19, wherein for diagnosis of pathologic changes in the thyroid glands, the band widths, peak positions, peak intensities/peak areas, and relative intensity variations of the peaks in the region of 1200 cm^{-1} - - 1580 cm^{-1} are detected.

21. (currently amended) The method as described in claim 14, wherein for diagnosis of pathologic changes in the parotid and submaxillary glands, the band widths, peak positions, peak intensities/peak areas, and relative intensity variations of the peaks in the region of 1000 cm^{-1} - - 1800 cm^{-1} are detected.

22. (currently amended) The method as described in claim 21, wherein for diagnosis of pathologic changes in the parotid and submaxillary glands, the band widths, peak positions, peak intensities/peak areas, and relative intensity variations of the peaks in the region of 1200 cm^{-1} - 1580 cm^{-1} are detected.